

The first detailed studies of the nearby active galactic nuclei population in hard X-rays with NuSTAR.

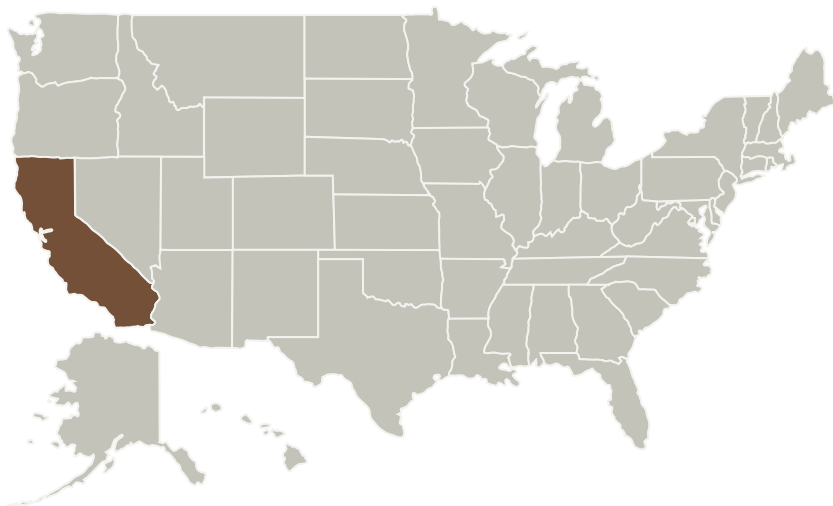
Completed Technology Project (2016 - 2017)



Project Introduction

The broad topic of this Research Proposal is studying the AGN population in the underexplored hard X-ray window that is now opened up thanks to NuSTAR. The NuSTAR Extragalactic Surveys team, which I am a part of, is dedicated to a constraining their physical properties, demographics and evolution. Within this large group effort, the focus of my Ph.D. thesis is on studying (i) statistically representative samples of nearby AGN based on the NuSTAR survey of Swift/BAT-selected targets, and (ii) particular AGN with interesting physical properties that can be constrained by the NuSTAR observations. This will result in improved knowledge of the typical and extreme broadband X-ray spectra of nearby AGN, and in increased understanding of the unresolved physical structures that shape it. Up to this point in my thesis work, I have led several and participated in half a dozen of such studies as a significant contributor. I am currently finishing the largest component of my thesis – the spectral analysis of a large sample of 120 AGN selected from the Swift/BAT survey – revealing for the first time the detailed hard X-ray spectra of a large number of obscured AGN. As the observed spectra cannot be explained fully with current models, I have also worked on a new spectral model, which will be a valuable resource to the community. I plan on extending my analysis to X-ray spectral variability, and to physical properties inferred from multi-wavelength data in future studies. Ultimately, these studies will provide the crucial benchmark against which the high-redshift studies of AGN will be interpreted.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Responsible Program:

Astrophysics

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Organizations Performing Work	Role	Type	Location
California Institute of Technology(CalTech)	Supporting Organization	Academia	Pasadena, California

Primary U.S. Work Locations

California

Project Management

Program Manager:

Joe Hill-kittle

Principal Investigator:

Fiona A Harrison

Co-Investigators:

Lisa A Miller

Mislav Balokovic

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.4 Information Processing
 - └ TX11.4.4 Collaborative Science and Engineering

Target Destination

Outside the Solar System